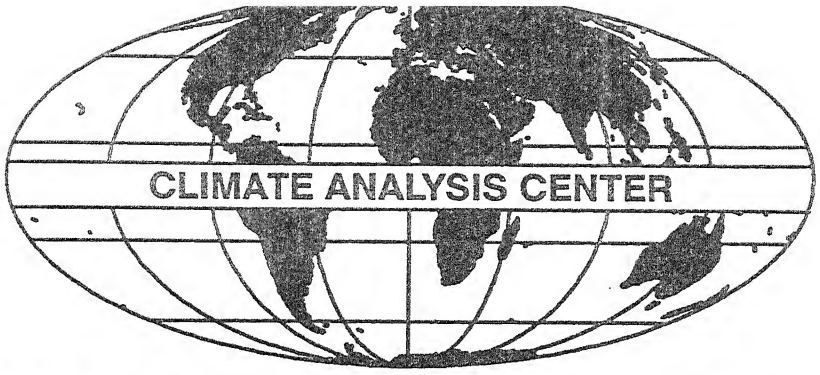
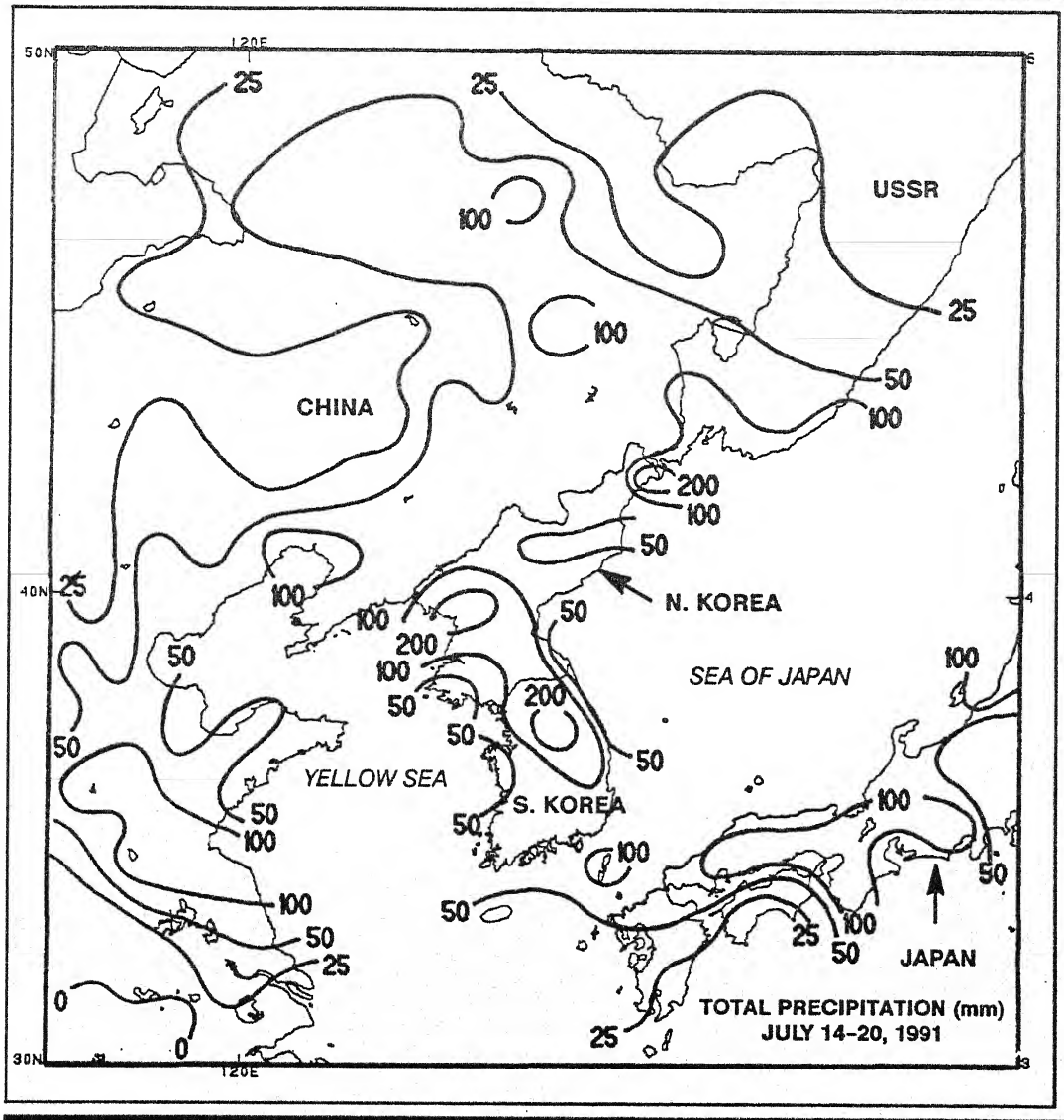


CONTAINS:
JUNE 1991
GLOBAL
CLIMATE
ANOMALIES

WEEKLY CLIMATE BULLETIN

No. 91/29 Washington, DC July 20, 1991



Dry weather prevailed over the Yangtze Valley, providing relief from two weeks of incessant flooding; however, unusually heavy rains drenched much of northeastern China, Korea, and western Japan. Torrential weekend rains triggered floods and landslides in South Korea that took at least 35 lives and forced thousands to flee their homes, according to press reports. The Suwon area, 30 miles south of Seoul, was most severely affected as 270 mm of rain fell in less than four hours. The main railroad and an expressway between Seoul and Pusan were washed out by floodwaters during the deluge.

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE-NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *Global two–week temperature anomalies.*
- *Global four–week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three–month precipitation anomalies (once a month).*
- *Global twelve–month precipitation anomalies (every three months).*
- *Global three–month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF JULY 20, 1991

1. Central and Eastern United States:

LATE-WEEK HEAT WAVE AGGRAVATES CONTINUING DRYNESS.

Scattered showers brought 25–75 mm of rain to portions of eastern West Virginia, western Virginia, and the Carolinas. Little or no rain, however, was measured throughout the rest of the area, allowing moisture deficits to grow. Since late May, less than half of normal rainfall has been measured across the northern half of Maryland and central Pennsylvania, through interior Ohio, from western Indiana westward through southeastern Iowa, and throughout southern and eastern Kansas, southwestern Missouri, and adjacent sections of Oklahoma and Arkansas [Dry – 8 weeks]. Furthermore, the continued dryness was exacerbated by a late-week heat wave that spread from the Great Plains to the eastern seaboard. Weekly departures of +2°C to +4°C were measured at most locations, although near normal readings were observed along and south of central Illinois, southern Indiana, and the south Atlantic states. Highs exceeded 38°C from south-central Pennsylvania northeastward through southeastern New York, Connecticut, and Rhode Island [Warm – 8 weeks].

2. Central Mexico:

ABNORMALLY HEAVY RAINS AGAIN DOUSE REGION.

Much of central Mexico received another 40–105 mm of rain during the week, bringing accumulated surpluses since late June to as high as 405 mm. Numerous stations have reported 2 to 5 times normal rainfall during the period [4 weeks].

3. The Sahel:

POCKETS OF DRYNESS REMAIN.

Rainfall totals of 20–60 mm were measured at scattered locations across east-central Sudan and adjacent Ethiopia as well as along the southern tier of Niger, keeping moisture deficits at or somewhat below last week's levels. Farther west, little or no rain again fell across the western half of Senegal and southwestern Mauritania, where severe dryness continued. Since early June, rainfall deficits of 50–90 mm have developed at most locations, with portions of east-central Sudan reporting 100–115 mm shortfalls and sections of southwestern Senegal recording departures down to –180 mm [5 weeks].

4. The New Lands:

A SECOND WEEK OF WIDESPREAD RAIN ENDS DRYNESS.

Most locations across the New Lands measured 20–60 mm of rain, bringing an end to the dryness that has persisted since early April. Only a few locations near the central Kazakh desert continued reporting significant moisture deficits [Ended after 16 weeks].

5. Northwestern India:

WETTEST WEEK OF RAINY SEASON ACROSS GUJARAT AND NORTH-CENTRAL INDIA.

Very heavy rains (200–300 mm) drenched coastal southern Gujarat while moderate totals (50–90 mm) were measured farther north across the remainder of Gujarat and north-central India. Farther north, however, another dry week was observed as upper Uttar Pradesh and northern Rajasthan recorded little or no rainfall. Despite the large weekly totals in many areas, sizable moisture deficits persist throughout the region, with most locations recording shortfalls of 80–220 mm since early June [7 weeks].

6. Eastern Asia:

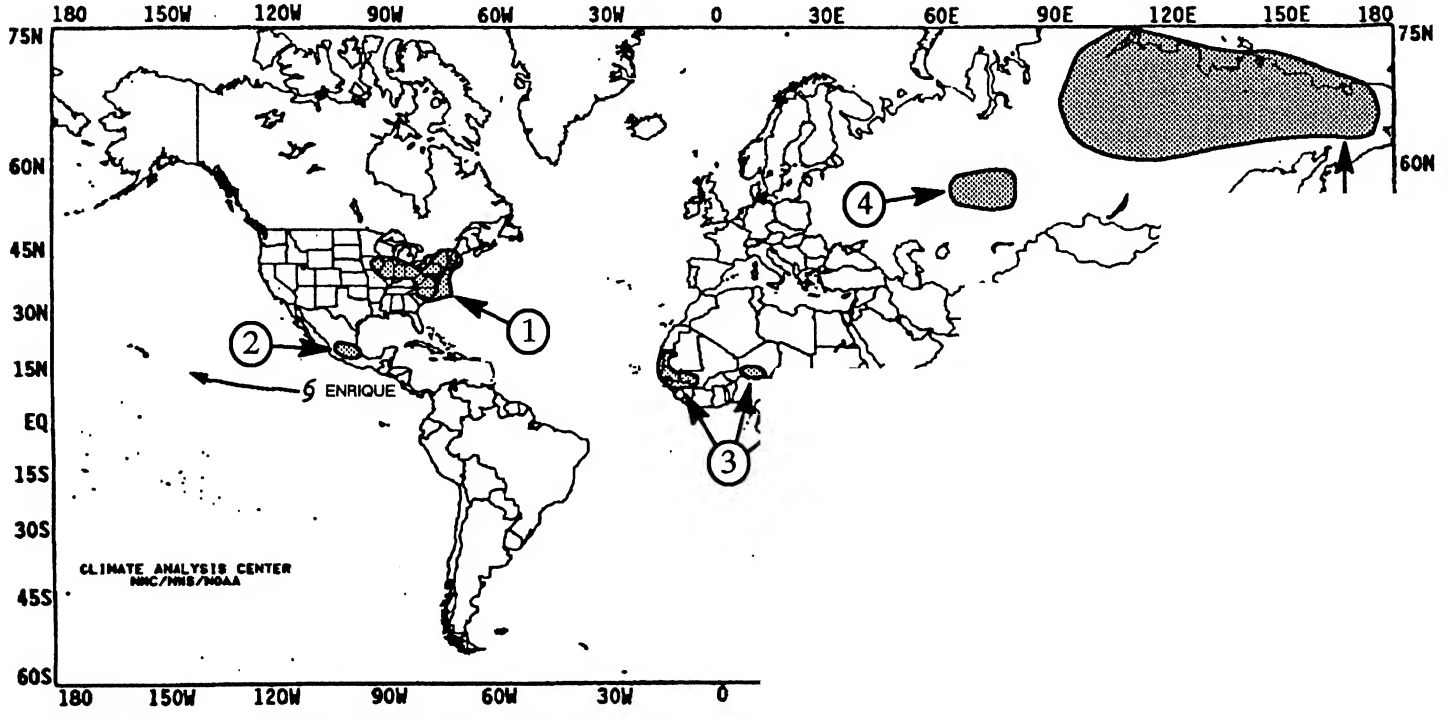
A DRY WEEK BRINGS NEEDED RELIEF TO YANGTZE RIVER VALLEY.

Little or no rain fell across the Yangtze River Valley, allowing the region to recover somewhat from the deluging rains of the past several weeks. Farther north, however, abnormal wetness continued across western Japan, the Koreas, and Manchuria, where most areas measured 50–110 mm while up to 250 mm soaked the central Korean Peninsula (see front cover). In addition, Typhoon Amy brought heavy rainfall (100–300 mm) and wind gusts up to 275 kph to eastern Taiwan and along coastal southeastern China near Shantou, where the storm made landfall. The system disintegrated rapidly after moving inland, however, sparing inland southeastern China from significant damage and heavy rainfall [7 weeks].

7. Siberia:

COOLER AIR MOVES INTO ALASKA, BUT MUCH OF SIBERIA REMAINS ABNORMALLY WARM.

Below normal temperatures were measured across most of Alaska and extreme eastern Siberia, bringing an end to the recent spell of mild weather in those areas; however, weekly departures of +3°C to +8°C were again observed across much of central and eastern Siberia. Highs exceeded 35°C in spots across the southern tier of the affected region, between 60°N and 70°N [5 weeks].



EXPLANAT

TEXT: Approximate duration of anomalies is in brackets. Precipitatio
MAP: Approximate locations of major anomalies and episodic events temperature anomalies, four week precipitation anomalies, lon

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF JULY 14 – 20, 1991

The eastern two–thirds of the nation continued to bake in hot and sultry conditions. Much of the central and northern Plains, Great Lakes, and New England endured temperatures averaging 6°F to 9°F above normal (Table 2). Blistering triple–digit heat scorched the Great Plains as temperatures soared to 104°F at Bismarck, ND. High humidity combined with the heat to produce apparent temperatures greater than 100°F across much of the desert Southwest, Plains, Mississippi Valley, Southeast, and Atlantic coast (page 5). Hot and dry conditions continued to parch much of the Northeast, mid–Atlantic, Ohio Valley, Corn Belt, and central Plains, stressing crops. In contrast, unseasonably cool air prevailed in the Pacific Northwest where temperatures averaged 6°F to 12°F below normal (Table 3). Cool and damp weather checked the spread of wildfires in Alaska's dry interior, where over one million acres have been burned this year. Severe thunderstorms rumbled across parts of the South, bringing scattered heavy rains (Table 1) and generating high wind and several tornadoes. Elberton, GA was soaked with over 7 inches on Tuesday while downpours flooded streets in Jacksonville and Orlando, FL. Intense thunderstorms also brought scattered locally heavy rains to the upper Mississippi Valley and upper Great Lakes. In addition, heavy early–week rain caused flooding in the southern High Plains.

At the start of the week, strong thunderstorms dumped heavy rains on eastern New Mexico, flooding the Rio Hondo and Pecos rivers. Three highways between Portales and Roswell, NM were closed by floodwaters. Summer storms also soaked the South with heavy downpours in Georgia, Florida, and South Carolina. Sizzling heat enveloped the Plains as temperatures soared above the century mark in North Dakota by mid–week. The mercury climbed above 90°F for three straight day in International Falls, MN; normally, only four days per year reach 90°F.

During the latter part of the week, the heat and high humidity spread into the eastern half of the country. The hot weather exacerbated persistent dryness stretching from the east–central Plains to the mid–Atlantic and Northeast. By week's end, numerous record daily high temperatures were reported from the Ohio Valley to New England and the mid–Atlantic. Scattered thunderstorms again drenched portions of the Southeast while heavy rains and severe weather pounded the upper Mississippi Valley and Great Lakes. Meanwhile, as much of the nation suffered from extreme heat, cool air settled into the Pacific Northwest.

According to the River Forecast Centers, the greatest weekly totals (more than 2 inches) fell across much of the Southeast, where over 10 inches inundated portions of northeastern Georgia. Scattered amounts of more than 2 inches were reported across the lower and upper Mississippi Valley, Upper Great Lakes, central Appalachians, southern Plains, and the Alaskan panhandle. Light to moderate amounts were measured across the remainders of the Southeast, lower and upper Mississippi Valley, upper Great Lakes, central Appalachians, southern High Plains, Alaska, and eastern Hawaii and in parts of the central and southern Rockies and Pacific Northwest. Little or no precipitation fell across most of the far West, Rockies, Great Plains, and Hawaii as well as through a large part of the country from the middle Mississippi Valley to the Northeast and mid–Atlantic coast.

Abnormally hot weather reached from the northern and central Plains to the Northeast where temperatures averaged 3°F to 9°F above normal (Table 2). Departures around +3°F were also recorded in the Great Basin, northern Rockies, and extreme northern Alaska. Hot weather prevailed across the desert Southwest and from the southern Plains to the southern Atlantic coast, where temperatures averaged near normal for the week. Temperatures averaged near to above normal in Hawaii.

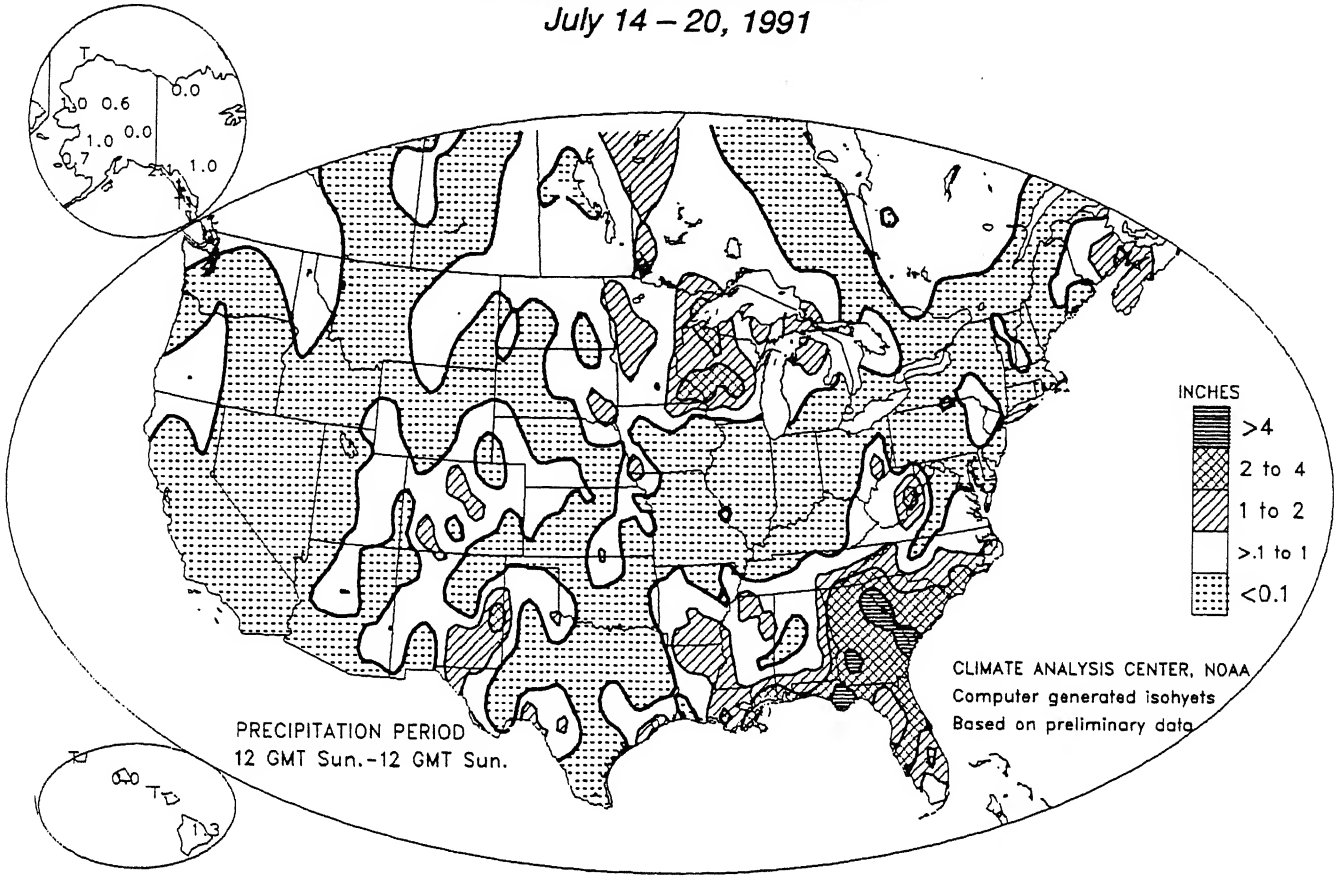
Unusually cool weather dominated the far West and southern portions of the Rockies and High Plains (Table 3). Temperatures were abnormally low in the northern Intermountain West, averaging form 7°F to 12°F below normal.In Alaska, cooler than normal conditions prevailed, with departures below –5°F at Bettles.

TABLE 1. *SELECTED STATIONS WITH 2.50 OR MORE INCHES OF PRECIPITATION DURING THE WEEK OF JULY 14 – 20, 1991*

STATION	TOTAL (INCHES)	STATION	TOTAL (INCHES)
APALACHICOLA, FL	7.65	BILOXI/KEESLER AFB, MS	3.16
SAVANNAH, GA	6.71	JACKSONVILLE, FL	3.12
BEAUFORT MCAS, SC	4.87	VALDOSTA/MOODY AFB, GA	2.99
ALBANY, GA	4.77	COLUMBIA, SC	2.96
CLOVIS/CANNON AFB, NM	4.63	PENSACOLA, FL	2.93
AUGUSTA, GA	4.38	SUMTER/SHAW AFB, SC	2.89
COLUMBUS/FT BENNING, GA	4.34	NEW ORLEANS/MOISANT, LA	2.82
JACKSONVILLE NAS, FL	3.41	MYRTLE BEACH AFB, SC	2.80
VALPARAISO/EGLIN AFB, FL	3.33	MELBOURNE, FL	2.76
JACKSONVILLE/CECIL FIELD, FL	3.20	ELKINS, WV	2.76
ATLANTA, GA	3.19	ATHENS, GA	2.58

OBSERVED PRECIPITATION

July 14 – 20, 1991



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

July 14 – 20, 1991

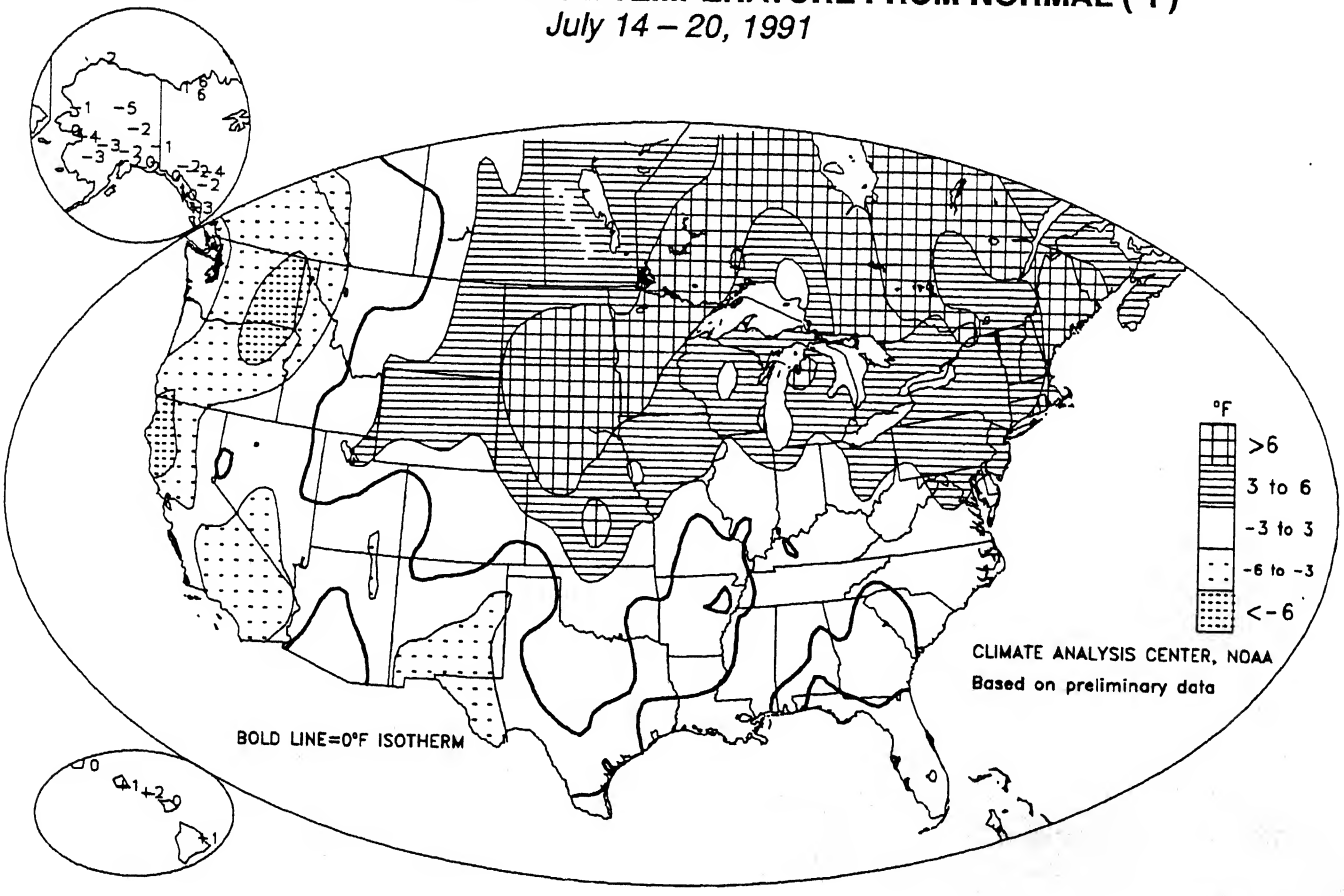


TABLE 2. *SELECTED STATIONS WITH TEMPERATURES AVERAGING 6.5°F OR MORE ABOVE NORMAL FOR THE WEEK OF JULY 14 – 20, 1991*

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
PICKSTOWN, SD	+9.0	85.7	NORTH PLATTE, NE	+7.3	81.9
HANCOCK, MI	+8.5	73.7	PROVIDENCE, RI	+7.2	80.3
WATERTOWN, SD	+8.2	79.9	TRAVERSE CITY, MI	+7.2	76.3
INTERNATIONAL FALLS, MN	+8.1	74.6	BOSTON, MA	+7.1	81.1
PIERRE, SD	+7.9	83.4	AUGUSTA, ME	+7.0	76.8
ABERDEEN, SD	+7.8	80.4	PORTLAND, ME	+7.0	75.6
BISMARCK, ND	+7.8	78.7	GRAND FORKS, ND	+6.9	75.9
SALINA, KS	+7.7	88.8	BANGOR, ME	+6.9	75.3
HURON, SD	+7.7	82.1	NEW YORK/LA GUARDIA, NY	+6.8	83.8
MILWAUKEE, WI	+7.7	78.7	DICKINSON, ND	+6.8	76.7
DEVIL'S LAKE, ND	+7.5	76.4	ALEXANDRIA, MN	+6.7	77.6
CONCORDIA, KS	+7.4	87.1	MASSENA, NY	+6.6	76.0
SIOUX FALLS, SD	+7.4	81.7	CARIBOU, ME	+6.5	72.0

TABLE 3. *SELECTED STATIONS WITH TEMPERATURES AVERAGING 4.0°F OR MORE BELOW NORMAL FOR THE WEEK OF JULY 14 – 20, 1991*

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
MEACHAM, OR	–11.6	52.7	BETTLES, AK	–5.4	54.7
PENDLETON, OR	–8.7	65.6	WENATCHEE, WA	–5.3	68.8
LEWISTON, ID	–7.3	67.4	PASO ROBLES, CA	–5.3	69.1
WALLA WALLA, WA	–7.3	68.6	REDDING, CA	–5.3	78.6
SPOKANE, WA	–6.4	63.8	STOCKTON, CA	–5.1	72.8
SEXTON SUMMIT, OR	–6.2	58.2	BURBANK/HOLLYWOOD, CA	–4.8	69.1
UKIAH, CA	–6.1	68.3	BURNS, OR	–4.4	65.6
TUCUMCARI, NM	–5.8	73.7	EL PASO, TX	–4.4	78.5
BAKERSFIELD, CA	–5.7	79.1	MARYSVILLE, CA	–4.3	74.6
STAMPEDE PASS, WA	–5.6	50.9	THERMAL, CA	–4.3	88.1
BLUE CANYON, CA	–5.6	63.4	IMPERIAL, CA	–4.2	88.4
RED BLUFF, CA	–5.5	77.2	BIG DELTA, AK	–4.0	56.4

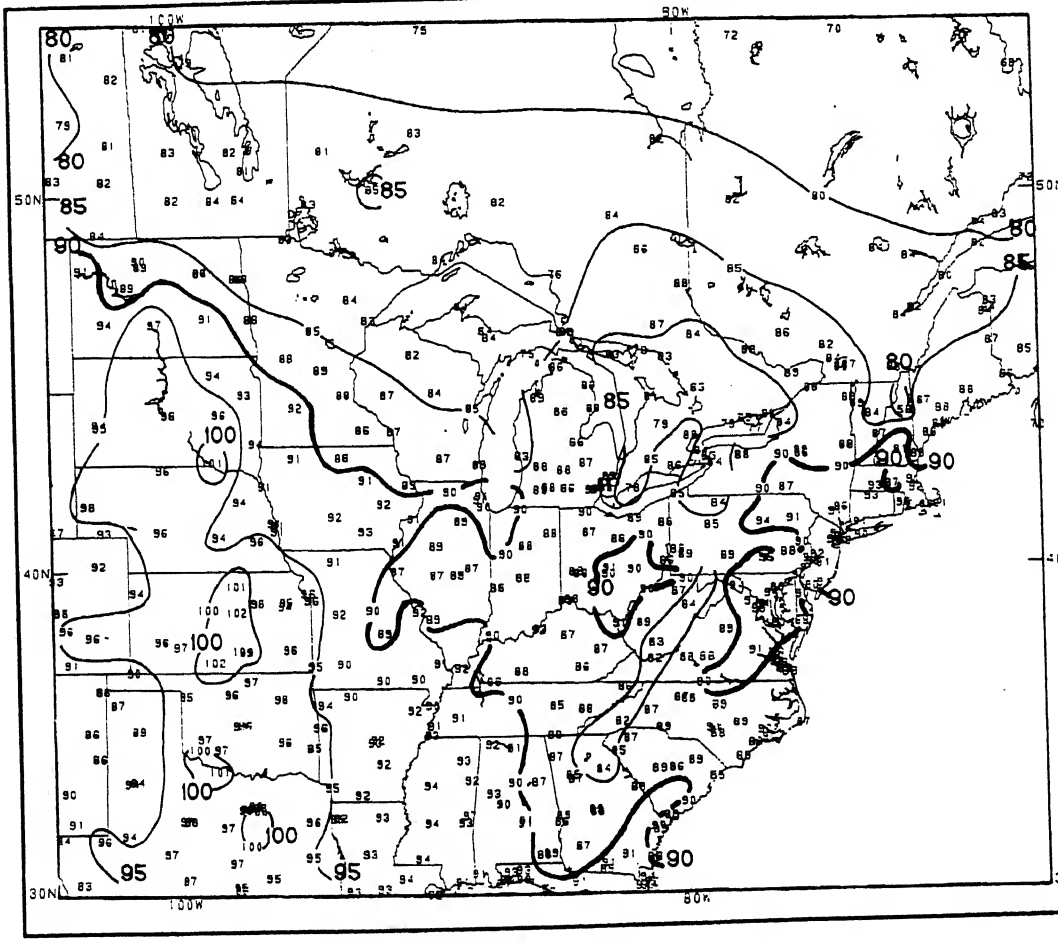
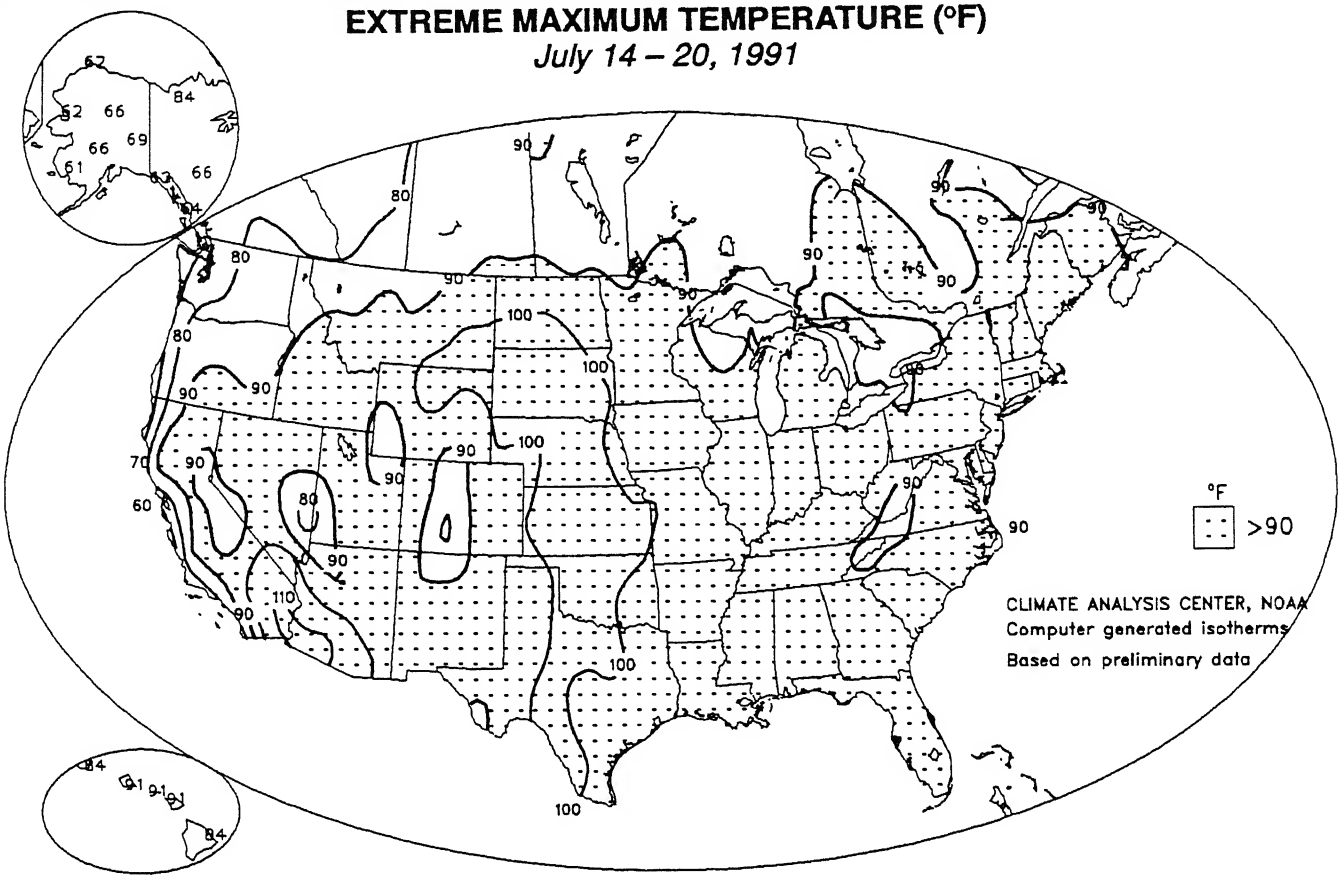


FIGURE 1. Average Daily Maximum Temperature (°F), July 14-20, 1991. *Isopleths are only drawn for 80°F, 85°F, 90°F, 95°F, and 100°F. Extreme heat persisted throughout the week in the Great Plains where daily maximum temperatures averaged in the upper nineties as far north as Bismarck, ND. Portions of the region from northern Texas to southern South Dakota simmered with high temperatures averaging above the century mark. The abnormally hot air surged across the East toward week's end as daily maximum temperatures averaged above 90°F in parts of the Ohio Valley, mid-Atlantic, and Northeast.*

EXTREME MAXIMUM TEMPERATURE (°F)

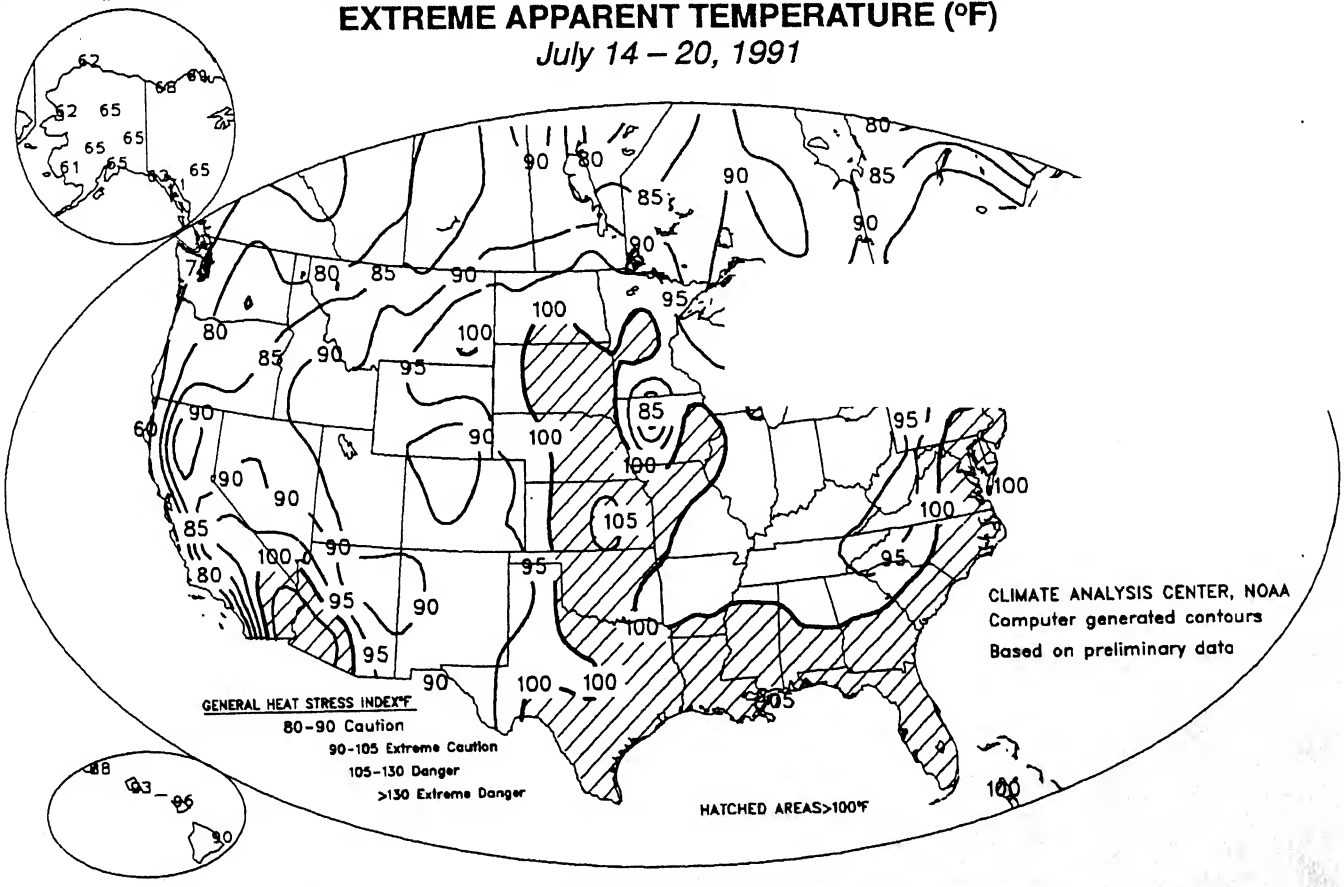
July 14 – 20, 1991



Intense mid–summer heat baked much of the nation as 100°F+ readings were recorded in portions of the northern Plains and Rockies, as well as in the southern and central Plains and desert Southwest (top). The hot and humid conditions produced a high heat index (apparent temperature>100°F) for much of the Plains, Mississippi Valley, Southeast, and Atlantic Seaboard (bottom).

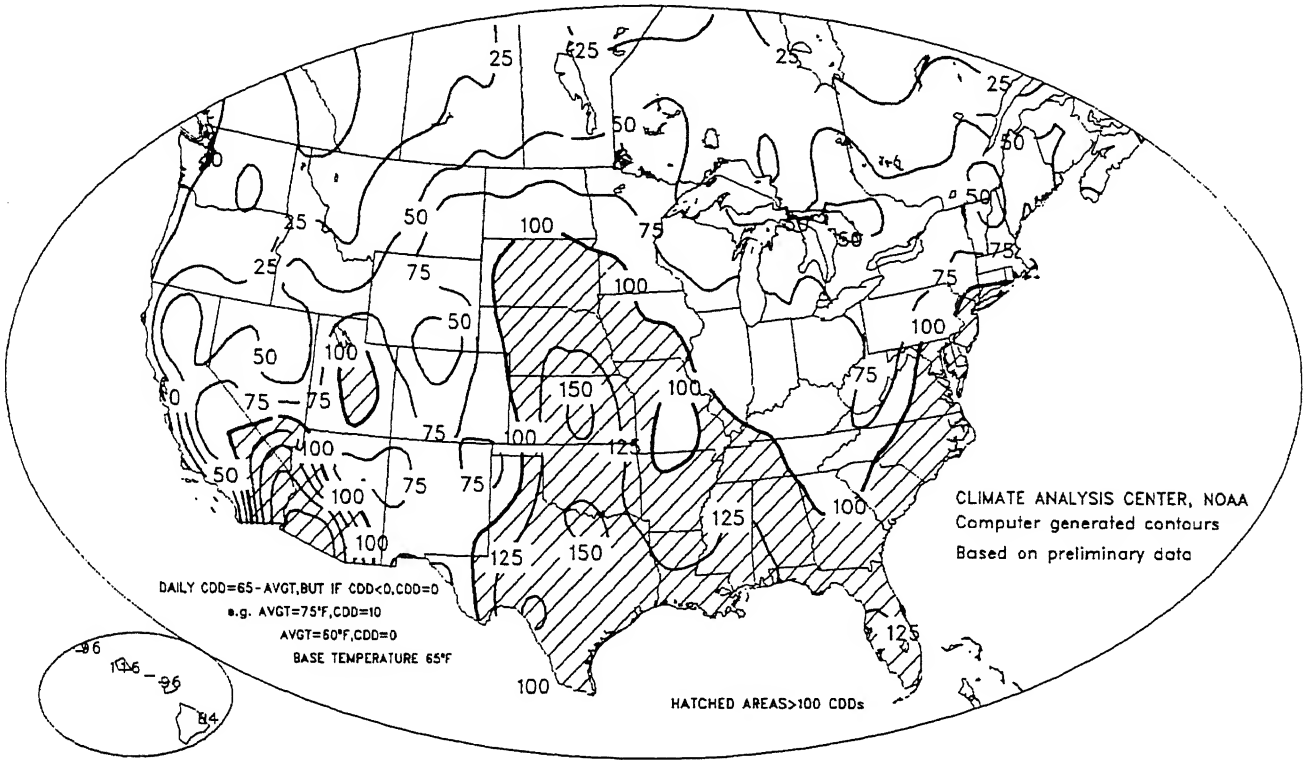
EXTREME APPARENT TEMPERATURE (°F)

July 14 – 20, 1991



WEEKLY TOTAL COOLING DEGREE DAYS

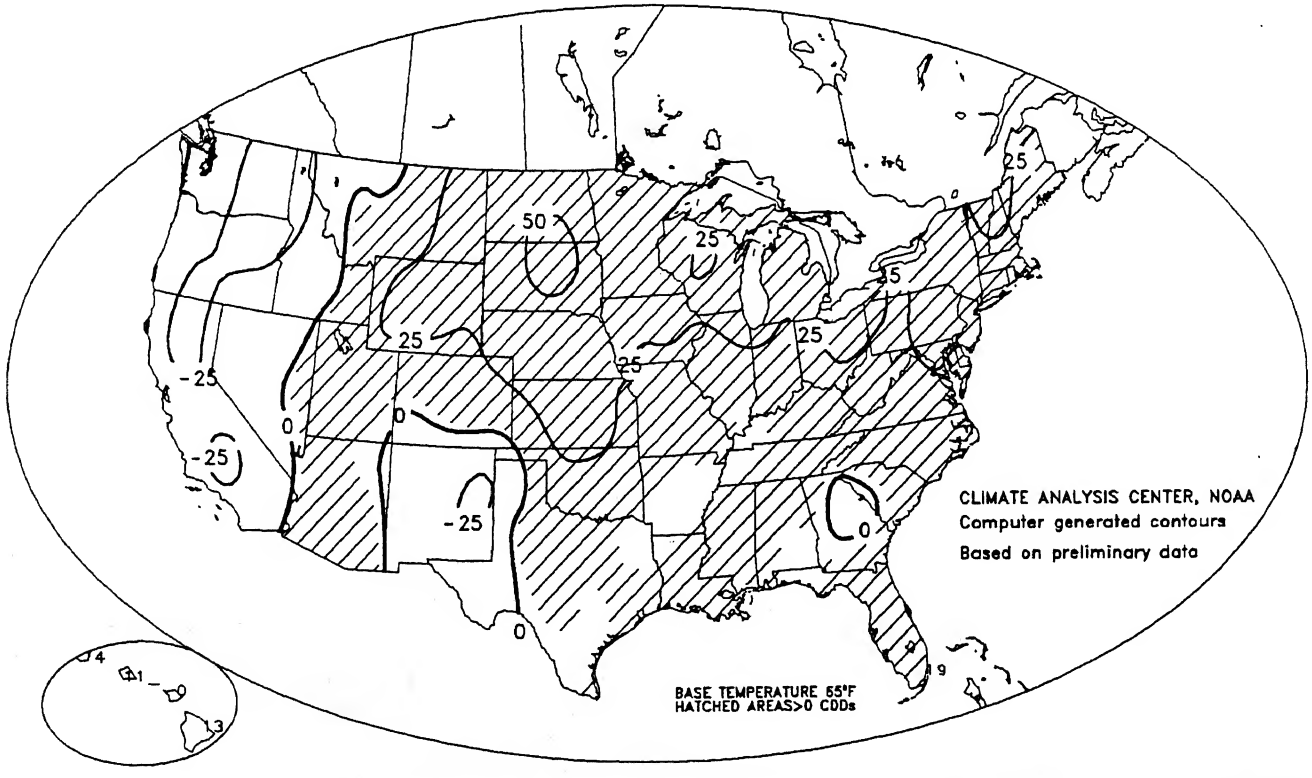
July 14 – 20, 1991

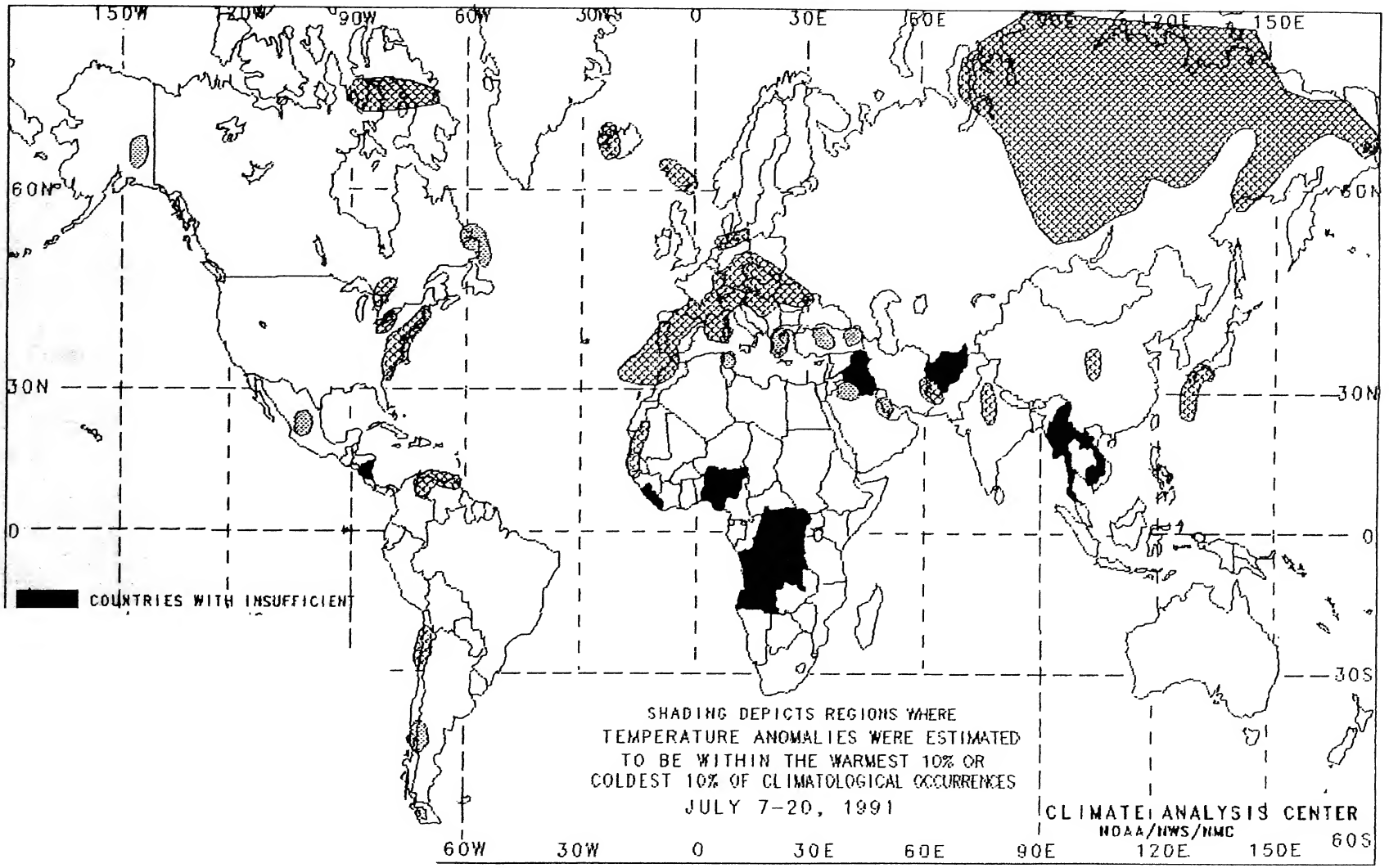


Hot weather during the week generated substantial cooling usage (>125 CDD's) across the central and southern Plains, parts of the Lower Mississippi Valley, and the southern half of Florida (top). The heat was not as extreme in the Far West and Southern Rockies, resulting in below normal weekly cooling demand (bottom).

WEEKLY DEPARTURE FROM NORMAL CDD

July 14 – 20, 1991





...ately 2500 observing stations ...eceived from synoptic ...sis so many night time ...vations the estimated ...y have resulted in an

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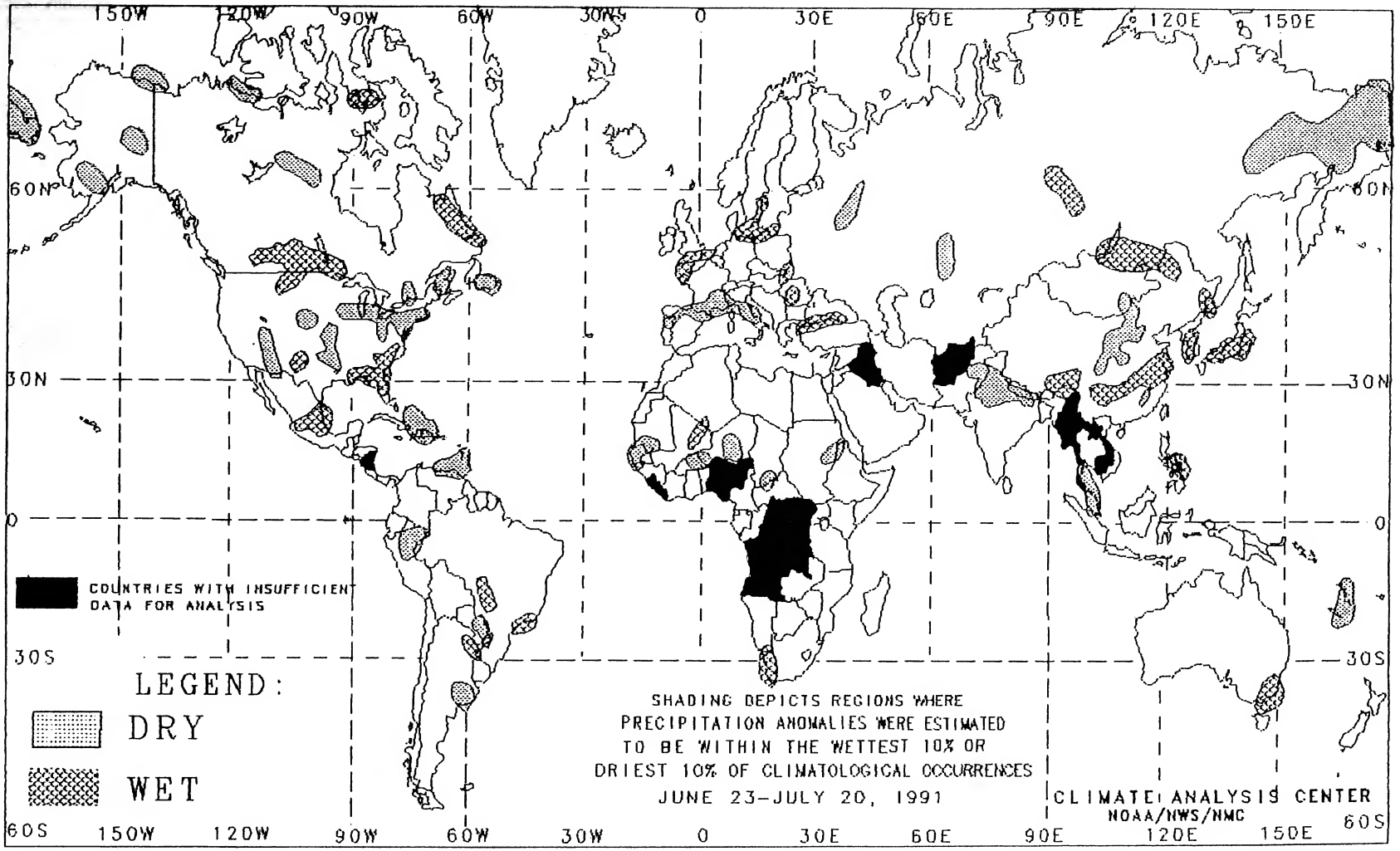
In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

4–WEEK GLOBAL PRECIPITATION ANOMALIES

JUNE 23 – JULY 20, 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

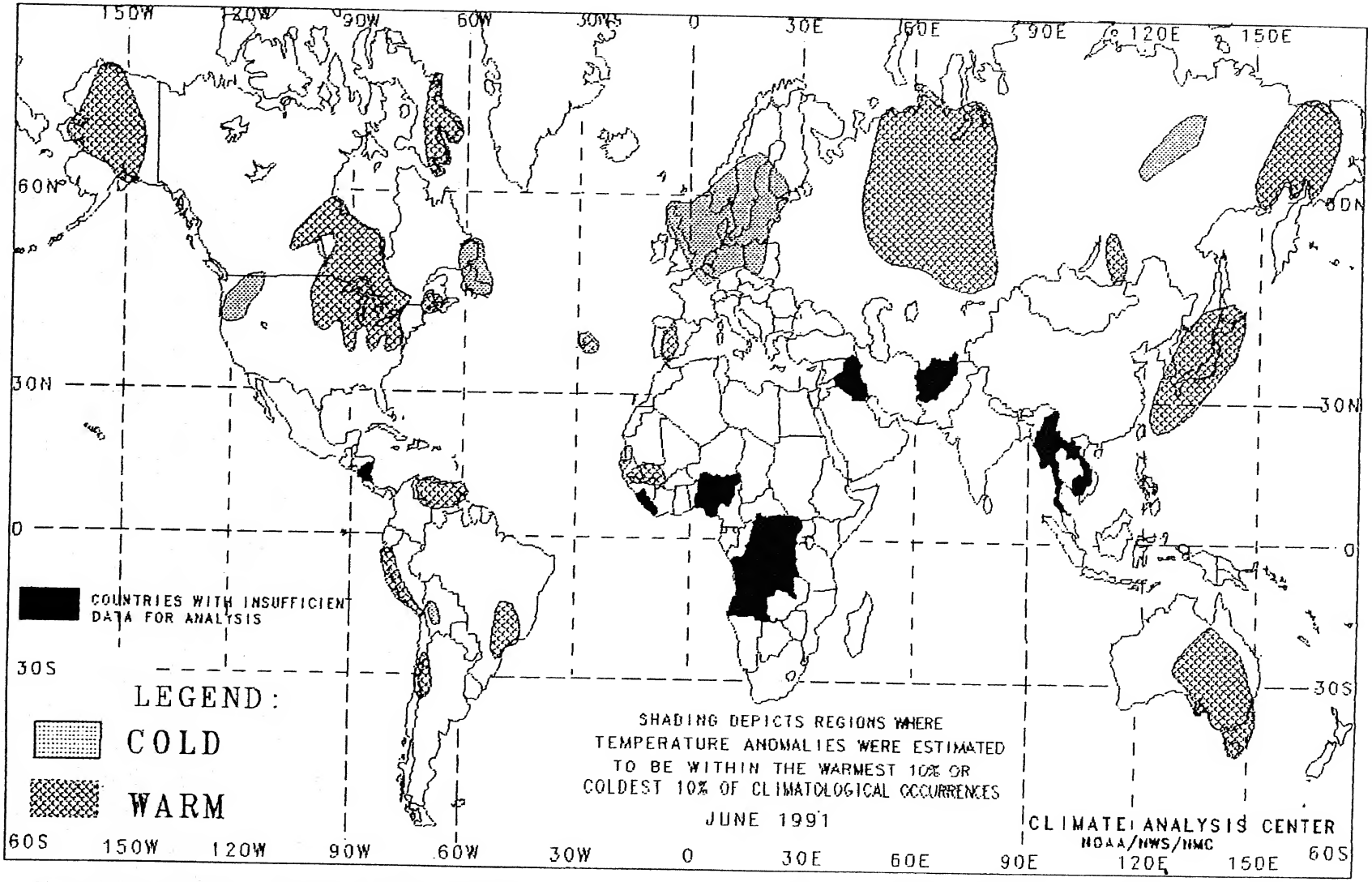
In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

MONTHLY GLOBAL TEMPERATURE ANOMALIES

JUNE 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 26 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty–four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warM anomalies.

Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of one month temperature anomalies. Çaution must be used in relating it to local conditions, especially in mountainous regions.

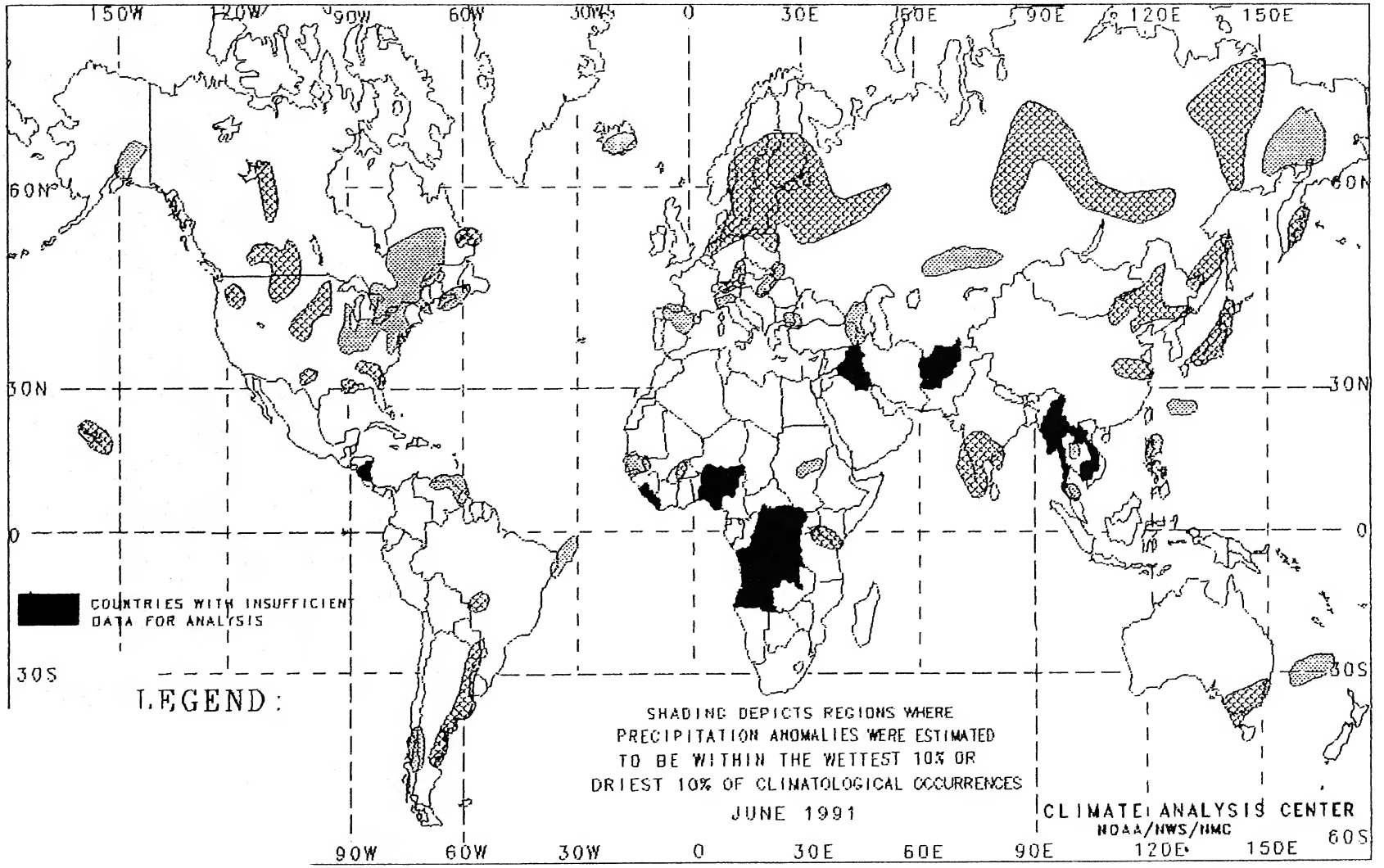
PRINCIPAL TEMPERATURE ANOMALIES

JUNE 1991

REGIONS AFFECTED	TEMPERATURE AVERAGE (°C)	DEPARTURE FROM NORMAL (°C)	COMMENTS
NORTH AMERICA			
Alaska	+3 to +18	+2 to +4	Very warm second half of June
Northwestern United States	+13 to +16	−2 to −4	COOL – 2 to 10 weeks
South Central Canada and Northeastern United States	+15 to +27	+2 to +4	WARM – 2 to 14 weeks
Maine	+17 to +19	+2 to +3	WARM – 5 weeks
Extreme Eastern Canada	+6 to +10	−2 to −3	Very cool first half of June
Eastern Baffin Island	+4 to +6	Around +3	MILD – 4 to 5 weeks
SOUTH AMERICA AND EASTERN PACIFIC			
Northern Venezuela	+21 to +31	Around +2	Very warm first half of June
Coast of Peru	+18 to +23	Around +2	Very warm first half of June
West–Central Bolivia	+2 to +5	−3 to −4	COLD – 4 to 7 weeks
Northern Chile and Adjacent Argentina	+9 to +14	+2 to +3	MILD – 2 to 8 weeks
East–Central Brazil	+15 to +18	Around +2	WARM – 4 to 10 weeks
EUROPE AND THE MIDDLE EAST			
Azores	+20 to +21	Around +2	Very warm early and late in June
Western Spain	+19 to +25	Around +2	WARM – 2 to 4 weeks
Northern Europe	+6 to +15	−2 to −4	COOL – 2 to 12 weeks
AFRICA			
Western Senegal	+24 to +26	Around −2	Very cool second half of June
Western Sahel	+31 to +35	Around +2	Very warm first half of June
ASIA			
Western Siberia	+4 to +24	+2 to +6	WARM – 2 to 14 weeks
South–Central Siberia	+14 to +18	+2 to +3	WARM – 5 to 6 weeks
North–Central Siberia	+9 to +11	−3 to −4	COLD – 5 to 8 weeks
Eastern Siberia	+8 to +16	+2 to +6	WARM – 3 to 5 weeks
Japan and Korea	+13 to +29	+2 to +3	WARM – 5 to 18 weeks
AUSTRALIA AND WESTERN PACIFIC			
Australia	+10 to +21	+2 to +4	WARM – 2 to 10 weeks

MONTHLY GLOBAL PRECIPITATION ANOMALIES

JUNE 1991



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The chart shows general areas of one month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

PRINCIPAL PRECIPITATION ANOMALIES

JUNE 1991

REGIONS AFFECTED	PRECIPITATION TOTAL (MM)	PERCENT OF NORMAL	COMMENTS
NORTH AMERICA			
South–Central Alaska	0 to 12	0 to 20	DRY – 10 weeks
Central Canada	61 to 188	279 to 374	Heavy precipitation first half of June
Northwestern United States	54 to 64	314 to 435	WET – 14 weeks
South–Central Canada and Adjacent United States	111 to 204	172 to 274	WET – 2 to 14 weeks
North–Central United States	116 to 162	170 to 229	Heavy precipitation first half of June
Eastern United States and Southeastern Canada	5 to 48	6 to 56	DRY – 4 to 11 weeks
Nova Scotia	18 to 46	19 to 52	DRY – 4 to 9 weeks
Central Newfoundland	150 to 167	161 to 215	WET – 2 to 5 weeks
Southeastern United States	191 to 297	203 to 295	WET – 2 to 7 weeks
Southeastern Louisiana	241 to 272	227 to 233	WET – 18 weeks
West–Central Texas	89 to 205	245 to 321	WET – 5 weeks
Hawaiian Islands	95 to 250	161 to 232	WET – 4 weeks
SOUTH AMERICA AND EASTERN PACIFIC			
Northern Venezuela	7 to 100	13 to 50	DRY – 5 to 14 weeks
West–Central Brazil	61 to 84	304 to 805	Heavy precipitation second half of June
Extreme Eastern Brazil	111 to 148	40 to 42	DRY – 5 weeks
Argentina, Uruguay, and Paraguay	72 to 260	200 to 426	WET – 4 to 15 weeks
Central Chile and Adjacent Argentina	13 to 106	17 to 43	DRY – 5 weeks
EUROPE AND THE MIDDLE EAST			
Iceland	14 to 20	28 to 32	DRY – 6 weeks
Northern Europe	70 to 162	171 to 340	WET – 2 to 14 weeks
Switzerland, Germany, and Czechoslovakia	118 to 400	157 to 183	WET – 2 to 4 weeks
Southeastern Bulgaria and Northwestern Turkey	4 to 22	14 to 32	DRY – 5 weeks
Eastern Turkey and Adjacent Soviet Union	18 to 40	28 to 41	DRY – 8 weeks
Hungary and Poland	20 to 39	24 to 40	DRY – 5 to 7 weeks
Northern Italy	0 to 45	26 to 47	DRY – 8 weeks
Northern Spain	1 to 38	1 to 39	DRY – 5 weeks
AFRICA			
Senegal and Adjacent Mali	0 to 34	0 to 41	DRY – 10 weeks
Burkina Faso	159 to 195	170 to 184	WET – 2 to 4 weeks
Sudan	0 to 7	0 to 11	DRY – 6 weeks
Tanzania	85 to 100	404 to 1413	Heavy precipitation second half of June
ASIA			
Kazakh S.S.R.	0 to 6	0 to 20	DRY – 6 to 18 weeks
Central Siberia	85 to 136	160 to 184	WET – 2 to 4 weeks
Eastern Siberia	65 to 125	195 to 335	WET – 2 to 10 weeks
Extreme Eastern Siberia	0 to 12	0 to 32	DRY – 10 weeks
Kamchatka Peninsula	85 to 149	249 to 275	WET – 8 weeks
Southeastern Siberia	83 to 166	187 to 275	WET – 5 weeks
Northeastern China	56 to 298	160 to 397	WET – 4 to 10 weeks
East–Central China	236 to 455	256 to 491	WET – 9 to 13 weeks
Japan	133 to 348	170 to 189	WET – 2 to 4 weeks
Ryukyu Islands	10 to 44	5 to 15	DRY – 13 weeks
Northern Thailand	25 to 76	21 to 43	DRY – 4 to 5 weeks
Southern Thailand	37 to 82	16 to 37	DRY – 4 weeks
Southern India	191 to 872	179 to 426	WET – 4 to 8 weeks
AUSTRALIA AND WESTERN PACIFIC			
Northern Philippines	5 to 88	3 to 28	DRY – 14 weeks
Lord Home and Norfolk Islands	0 to 74	0 to 46	DRY – 4 to 10 weeks
Southeastern Australia	93 to 422	147 to 276	Heavy precipitation early and late in June

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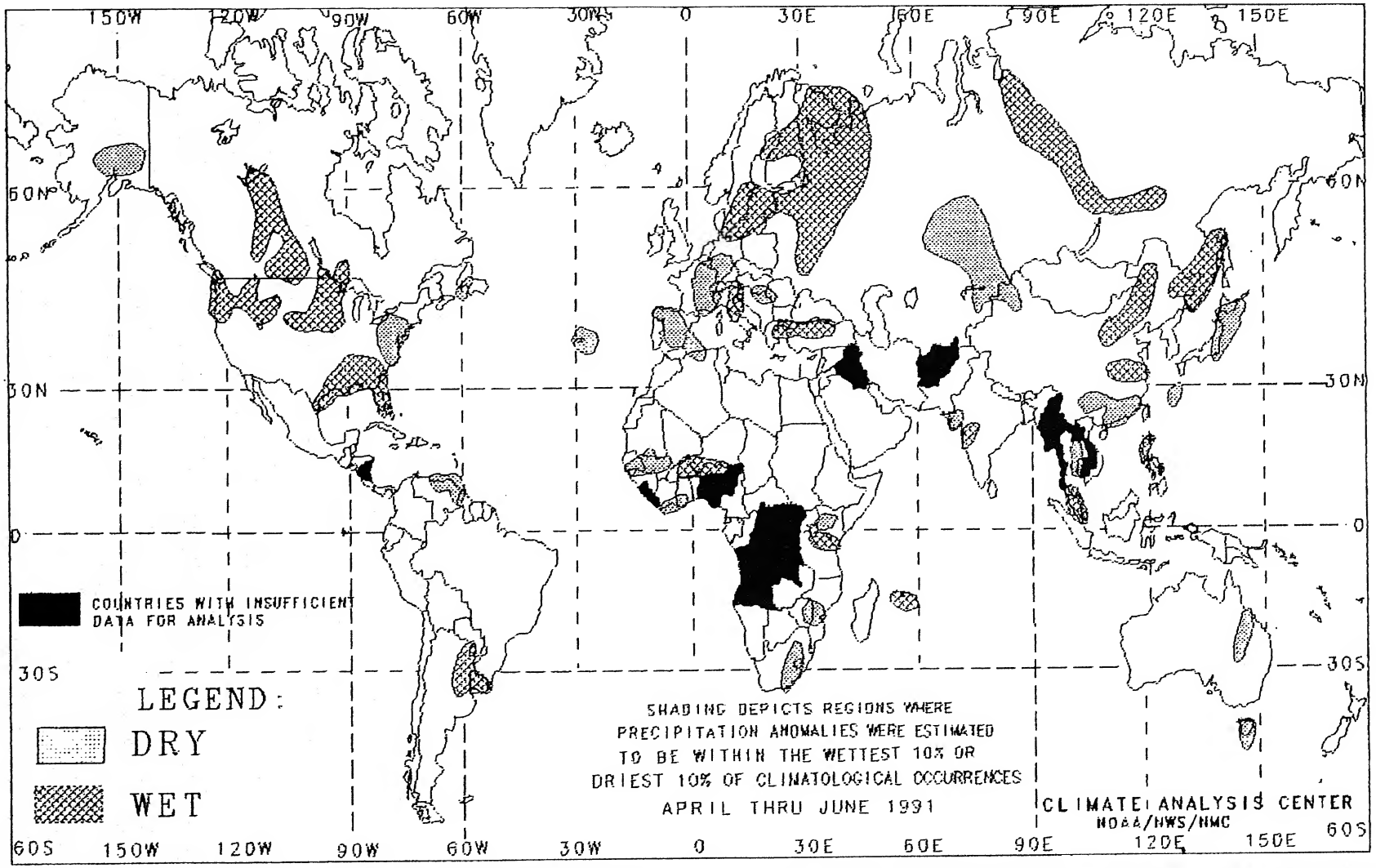
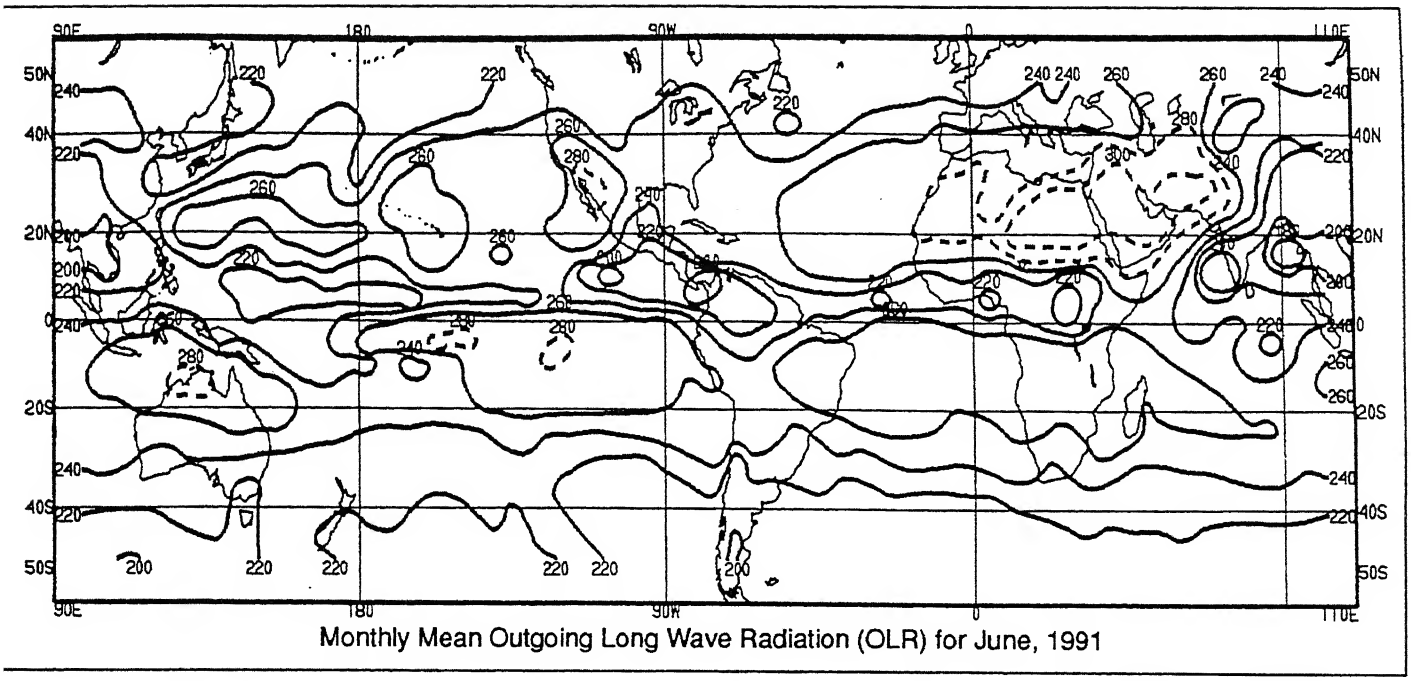


The anomalies on this chart are based on approximately 2500 observing stations for which at least 81 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the three month period is less than 50 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total three month precipitation exceeds 125 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of three month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

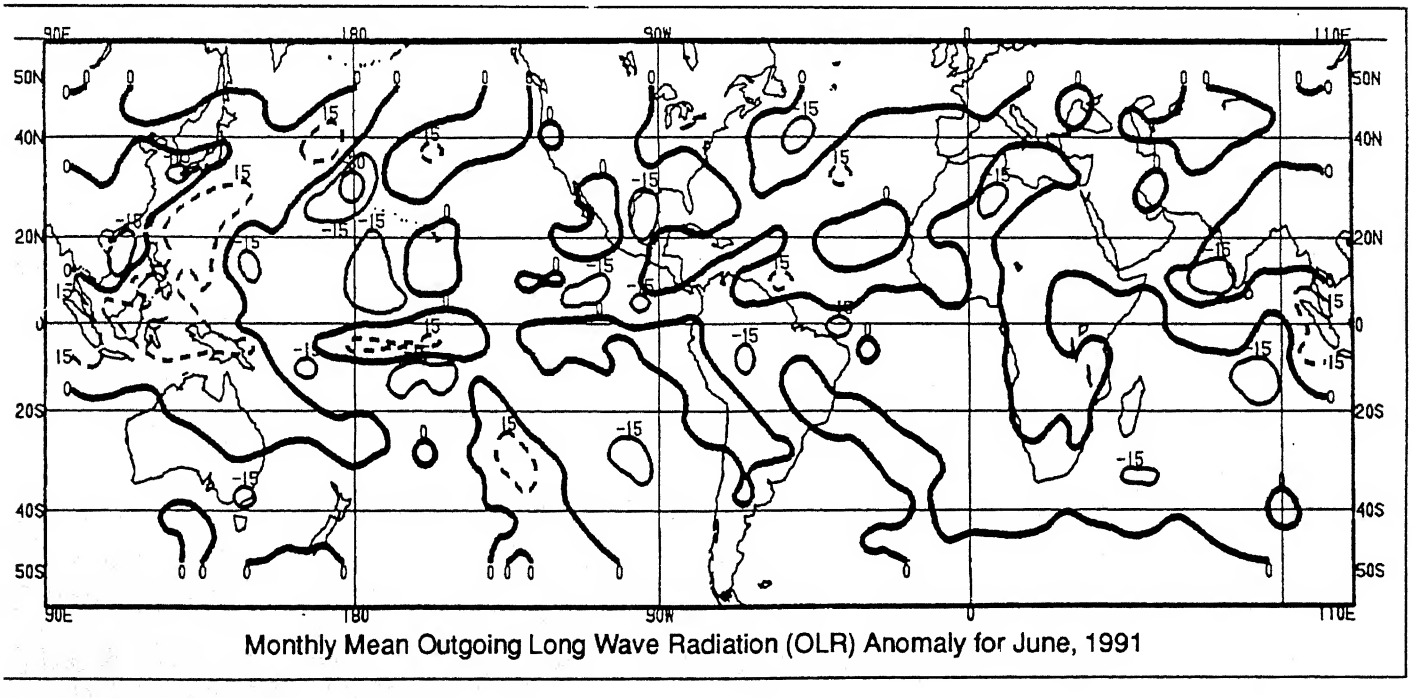


Monthly Mean Outgoing Long Wave Radiation (OLR) for June, 1991

EXPLANATION

The mean monthly outgoing long wave radiation (OLR) as measured by the NOAA–9 AVHRR IR window channel by NESDIS/SRL (top). Data are accumulated and averaged over 2.5° areas to a 5° Mercator grid for display. Contour intervals are 20 Wm^{-2}, and contours of 280 Wm^{-2} and above are dashed. In tropical areas (for our purposes 20°N – 20°S) that receive primarily convective rainfall, a mean OLR value of less than 200 Wm^{-2} is associated with significant monthly precipitation, whereas a value greater than 260 Wm^{-2} normally indicates little or no precipitation. Care must be used in interpreting this chart at higher latitudes, where much of the precipitation is non–convective, or in some tropical coastal or island locations, where precipitation is primarily orographically induced. The approximate relationship between mean OLR and precipitation amount does not necessarily hold in such locations.

The mean monthly outgoing long wave radiation anomalies (bottom) are computed as departures from the 1979 – 1988 base period mean. Contour intervals are 15 Wm^{-2}, while positive anomalies (greater than normal OLR, suggesting less than normal cloud cover and/or precipitation) are dashed and negative anomalies (less than normal OLR, suggesting greater than normal cloud cover and/or precipitation) are solid.



Monthly Mean Outgoing Long Wave Radiation (OLR) Anomaly for June, 1991